Derby (H.)

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NEAR SIGHT,

TREATED BY

ATROPIA.

WITH TABLES.

bought

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BY

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READ BEFORE

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ON THE ATROPINE TREATMENT OF ACQUIRED AND PROGRESSIVE MYOPIA. With a Table of Cases.

By Hasket Derby, M.D.

The recent therapeutics of progressive and of acquired myopia have received but moderate attention from English writers on ophthalmology. Accepting apparently the dictum of Donders, that the cure of this error of refraction belongs to the class of things "devoutly to be wished for" with unquestioning faith, they have contented themselves with discussing the division of the external recti, in cases where weakness of the interni is found, and in going into the general question of prophylactics. The investigations that have been going on, especially in St. Petersburg and Basle, within the past six years, have attracted very little attention elsewhere, judging at least from current ophthalmic literature. It is therefore with less diffidence that I present a few results of my own, and, having nothing original as regards method to bring before the Society, briefly direct its attention to some departures from the received doctrines on this subject which a few years have inaugurated. Though few in number, they are by no means unimportant.

Speaking of the pain in and fatigue of the eyes experienced by many myopic persons during work on near objects, Donders observes in his classical work on the subject: "In the higher grades of myopia, a species of spasm of the accommodation is not unfrequently associated with this irritable condition, and an even increased degree of myopia is found, which disappears, however, as the irritability diminishes; especially after the abstraction of blood by means of the Heurteloup leech, and after a prolonged seclusion in the dark. Professor Junge, of

St. Petersburg, has called my attention to this fact, and I have found a confirmation of it in several cases."

It will be seen from the above that our illustrious master is inclined to limit the accommodative spasm to the higher grades of myopia, and hence considers its occurrence as comparatively infrequent. It is also to be inferred that he regards the spasm as dependent on the irritability, and as disappearing on its removal.

Different results have, however, been arrived at by a follower of Professor Junge, who undertook the investigation of this subject at his suggestion, and in 1868 published his labors in a supplement to the "Klinische Monatsblätter für Augenheilkunde." With the work of Dobrowolsky you are doubtless familiar, but a resumé of his opinions seems hardly out of place in this connection.

He found the complication of myopia with accommodative spasm to be much more frequent than had previously been supposed—observing it 69 times in 105 cases. It was met with in all grades, yet more frequently with the lower than the higher. It was found to occur with emmetropia and counterfeit myopia.

According to him, myopes, being under all circumstances unable to see distant objects distinctly, are less tempted to relax their accommodation for the far than emmetropes. The ciliary muscle is thus apt to remain in a state of constant tension. This spasmodic contraction yields slowly to atropine. One or two applications, even though made in substance, are not sufficient to cause complete relaxation, and the accommodation lets up little by little, and in a varying degree—the process often occupying several days. Where the intraocular pressure is heightened, the effect of the atropine is least, and increases as the former is diminished.

Dobrowolsky found the symptoms of irritation to depend on the cramp of the accommodation, and not, according to Donders, to act as its cause.

The increase or diminution in the myopia was also found to depend on the degree of congestion of the vessels of the intraocular tunics; local depletion directly diminishing the myopia by bringing about a lessened intraocular pressure, and hence a shortening of the visual axis.

While admitting, with Donders and Stellwag, the influence of hereditary predisposition, as well as congenital myopia, he found a distinct class of cases where undue exercise of the accommodation caused atrophic changes around the optic entrance, and consequent lengthening of the visual axis in the normal, and even in the hypermetropic eye. He found the latter developing staphyloma posticum, becoming emmetropic and even myopic.

The therapeutics employed by Dobrowolsky were the application of atropine, often in substance, and the use of the artificial leech on the temple. The latter he found to lessen the hyperemia resulting from the accommodative spasm; the former to diminish both. With reference to the acuteness of vision, he found this to increase in proportion as the capillary hyperemia of the optic entrance, the congestion, tortuousness, and number of the visible vessels were diminished. Atropine, by bringing this about, often added to the acuteness of vision, even where it did not diminish the refraction.

This is an exceedingly brief and imperfect resumé of the labors of Dobrowolsky. In 1871, Dr. Hosch, of Basle, a scholar of Professor Schiess Gemuseus, and in 1872 the Professor himself published short dissertations, the former on "The Therapeutical Effects of Atropine on Myopic Eyes," the latter on "The Therapeutics of Myopia." The pamphlet of Schiess is accompanied by a tabular statement of fifty-three cases, embracing the twenty-nine reported by his pupil.

To Professor Schiess belongs the credit of utilizing the researches of Dobrowolsky for ophthalmic practice. So long, he justly observes, as myopia was considered largely hereditary and entirely incurable, the ophthalmic surgeon contented himself with giving suitable cautions, and prescribing, in general terms, a course of dietetics calculated to arrest the progress of the trouble he had no hope of ameliorating. But with the knowledge that the affection commenced in many cases with an accommodative spasm, antedating the organic change, and with the certainty that it was often acquired during school years or in early life by individuals manifesting no hereditary predisposition, born emmetropic and even hypermetropic, to a much greater extent than had ever been imagined, came the

idea of probable arrest and possible diminution, and even cure.

Cases of acquired myopia were recognized by Schiess from the outset as those most adapted for treatment, the more recent being naturally the more favorable. He lays down the axiom that the longer the myopia has lasted, and the higher the degree it has acquired, the less is the proportion of spasm, and the greater that of lengthening of the axis, met with.

Withdrawing his patients from all use of the eyes on near objects, and arming them with protective glasses, he ordered twice daily the application of a solution of one part of atropine to 120 of water, and kept this up ordinarily for three or four weeks. The first result was taken after all the immediate effect of the atropine had subsided; and, for the purpose of estimating the ultimate effect, a second measurement was made as much later as possible—sometimes after one, sometimes after nine, months.

One hundred and one eyes were thus treated. The result was a conviction that atropine was capable of bringing about a permanent improvement in a very large number of cases of myopia, and of causing the complete disappearance of this error of refraction in certain cases where it was but slightly developed.

Spasm of accommodation was met with in a little over 85 per cent. of the cases treated.

Of 101 eyes 20 showed no myopia after atropinization.
66 " less " " "
in 15 myopia was unaltered or progressive.

In 69 per cent. there was definite improvement.
" 20 " " myopia was arrested.
" 9 " " myopia progressed.

I have made no special analysis of the results of Hosch, inasmuch as all his cases are embraced in the list just referred to. It should be noted that in the outset many cases of advanced myopia were treated, while later the atropine cure was only employed in the commencement of this affection. Had this

course been followed throughout, the results would have been even more favorable.

I present herewith a series of tables, drawn up on the plan of Professor Schiess, giving an analysis of the condition and results in sixty-seven eyes treated by me in this manner. These tables will readily explain themselves. Separate columns are left for the acuteness of vision, original myopia, immediate result (commonly estimated several days after the last application of atropine), and ultimate result as recorded at the last interview, as much later as possible—the interval between the two examinations being always given. These cases were all taken from my record-books, and some had been under observation a number of years. Under the head of "Remarks" I have stated any interesting points I could find in the history or progress of the case.

To a few of these cases I would call particular attention. Case No. 3 particularly interested me, from the manner in which the true state of the refraction came to be discovered. Patient, a schoolboy æt. twelve, had My. $\frac{1}{16}$ in February, 1866. In December of the same year it had increased to $\frac{1}{14}$. In March, 1867, there being much pain on use, I advised him to commence reading five minutes three times a day, increasing half a minute daily, and ordered him for this purpose $-\frac{1}{36}$ slightly tinted blue. April 27th there was still much local pain and intolerance of light, as well as blur on use. On examining his glasses, I found that the optician had given him, by mistake, *convex* $\frac{1}{36}$ instead of concave, and that his efforts to read with this glass had brought to light the true state of the refraction. An examination now showed Hm. $\frac{1}{36}$ and Ht. $\frac{1}{18}$. Pagenstecher reports * a case of chronic catarrh in a man 43 years of age, who had for three years worn what he bought for a plane, blue, protective glass. Up to the time of his putting it on, his vision had seemed normal. At first he had been unable to see distant objects as well, but after wearing the glass a time he grew accustomed to it, saw as well as ever, and was ultimately unable to get along without it. The glass proved to be convex $\frac{1}{12}$, given by a mistake of the optician for plane.

* Klin. Beob. aus der Augenheilanstalt zu Wiesbaden. Erstes Heft., S. 62.

I cannot agree with Pagenstecher that this was a case of acquired hypermetropia, but think that here, as in my own case referred to, the true refraction was brought to the surface by the accidental use of a partially neutralizing glass. If this is true, may it not be possible to overcome accommodative spasm by the use of appropriate convex glasses, and thus escape the loss of time incident to a prolonged course of atropine?

Case 9 was remarkable for the readiness with which the accommodative spasm yielded. The My. was $\frac{1}{20}$. Solid atropine was applied, and within 24 hours there was Hm. $\frac{1}{12}$. Thirteen days later there was Ht. $\frac{1}{8}$, showing a cramp of $\frac{1}{5.7}$. The largest cramp relieved by Schiess was one of $\frac{1}{8.2}$. In Liebreich's well-known case, My $\frac{1}{40}$. was converted by atropine into H. $\frac{1}{24}$, a cramp of $\frac{1}{15}$. So far as I have been able to follow the literature of the subject, the present is one of the largest degrees of cramp on record. The readiness with which it yielded to atropine was quite exceptional.

Case 30 shows My. $\frac{1}{20}$ turning into Ht. $\frac{1}{36}$ in the right eye, My. $\frac{1}{36}$ into Ht. $\frac{1}{36}$ in the left. On recommencing study, the right eye developed My. $\frac{1}{42}$; left, $\frac{1}{48}$. A weak convex glass being ordered for work on near objects, My. descended to $\frac{1}{60}$ in each eye. Contrary to orders, the glass was thrown aside, and the My. returned, as recorded, to $\frac{1}{48}$.

Case 32 shows a remarkable amount of spasm, which, unlike Case 9, yielded slowly and gradually to the influence of the mydriatic. December 13th, 1873, there was My. $\frac{1}{36}$ in each eye. 1874, January 9th, My. $\frac{1}{24}$, though all work had been refrained from during the interval. Commencing with January 12th, a solution of atropine (gr. os to ʒ j) was applied twice daily. 15th, Hm. $\frac{1}{30}$; 17th, Hm. $\frac{1}{18}$; 21st, Hm. $\frac{1}{14}$; 27th, Hm. $\frac{1}{13}$; 30th, the same; February 4th, Ht. $\frac{1}{11}$.

Finally, Case 14 exhibits the consequences resulting from persistent abuse of the eyes. E. G., æt. 12, the child of emmetropic parents, with no hereditary tendencies to near-sight, was examined by me in May, 1871, on account of pain and intolerance of light, brought on apparently by reading in the cars. My. $\frac{1}{72}$ was then found in each eye; no trace of posterior staphyloma was in existence. In November, 1872, she noticed that distant objects were growing less distinct, and there was

then found: right, My. $\frac{1}{20}$; left, My. $\frac{1}{36}$. Says that "on some days she can see more clearly than on others. On regarding distant objects intently they appear at first blurred, then suddenly grow distinct." Commencing staphyloma posticum is now plainly visible in each eye. Atropine was applied twice daily for six weeks, at the end of which time My. was $\frac{1}{36}$ right, $\frac{1}{72}$ left. Patient now went back to school, and, being both studious and ambitious, was soon absorbed in her work. 1874, June 6th, My. right, $\frac{1}{15}$, left, $\frac{1}{16}$, each staphyloma growing larger, much congestion of optic entrance and retinal vessels.

On summing up my results I find:

In 89.5 per cent. spasm of accommodation.
Of 67 eyes, 15 showed no myopia after atropine.
45 showed less myopia after atropine.
In 7 myopia was unaltered or progressive.
In 55.2 per cent. there was definite improvement.
In 8.9 per cent. myopia was arrested.
In 10.4 per cent. myopia progressed.
In 13 cases (21.3 per cent.) no subsequent information has yet come to hand.

The whole subject, in fine, needs and deserves further investigation and the collection of much more numerous statistics. As far as our present experience reaches, the following conclusions seem to me, as to others, justifiable.

That the emmetropic eye, through undue or disadvantageous use, acquires myopia much more frequently than has previously been supposed, and that such acquired myopia is very apt to be progressive, commencing with spasm of accommodation and going on, through a state of congestion and irritation, to the structural change characteristic of this error of refraction.

That the paralysis of the accommodation by means of atropine, persisted in during a period of several weeks, and furthered by rest of the eyes, shaded glasses, and, in extremely aggravated cases, by local blood-letting, offers a reasonable prospect of preventing the progress of the myopia, in some instances of lessening its amount, and, in occasional recent and slight cases, of removing it altogether.

That in cases of progressive myopia it is reasonable to expect positive results from an annual course of treatment similar to the above, carried on during those years which experience has shown to be most favorable to the advance of the myopia, thus enabling the patient to tide over a critical period. It is perhaps in its prophylactic action that the most importance is to be attributed to the atropine treatment.

ABBREVIATIONS USED.

M	Myopia.
H	Hypermetropia.
Hm	Manifest Hypermetropia.
Ht	Total Hypermetropia.
E	Emmetropia.
R and L	Right and Left.

No.	NAME.	Age.	Acuteness of Vision.	Original Myopia.	Treated by Atropine.	Immediate Result.	Primary Improvement.	Interval between Treatment and Second Examination.	Refraction then Found.	Final Improvement.	REMARKS.
1	Mr. H. R	47	$\frac{20}{20}$	$\frac{1}{60}$	90 days	E	$\frac{1}{60}$	9 years	M $\frac{1}{72}$	$\frac{1}{360}$	Never at all myopic till within a few weeks. Noticed it through difficulty experienced in shooting.
	L		$\frac{20}{20}$	$\frac{1}{60}$	76 days	E	$\frac{1}{60}$	9 years	E	$\frac{1}{60}$	
2	Miss P. R	20	$\frac{20}{40}$	$\frac{1}{7}$	56 days	M $\frac{1}{10}$	$\frac{1}{24}$	8 years	M $\frac{1}{8}$	$\frac{1}{56}$	Myopia of this eye was rapidly increasing, having been only 1-20 in January, 1866. In the other eye M 1-14 stationary.
3	Master C. R	12	$\frac{20}{20}$	$\frac{1}{14}$	15 days	Ht $\frac{1}{18}$	$\frac{1}{7.8}$	6 years	Hm $\frac{1}{34}$	$\frac{1}{8.8}$	Patient was first seen in February, 1866. His myopia was then 1-16. In December of the same year it was 1-14.
	L		$\frac{20}{20}$	$\frac{1}{14}$	15 days	Ht $\frac{1}{18}$	$\frac{1}{7.8}$	6 years	Hm $\frac{1}{30}$	$\frac{1}{9.5}$	
4	Mr. F.	18	$\frac{20}{20}$	$\frac{1}{54}$	17 days	M $\frac{1}{7}$	$\frac{1}{29}$	4 months	M $\frac{1}{64}$	$\frac{1}{36}$	Eyes examined together. Small staphyloma post. in each.
5	Mr. G. R	17	$\frac{20}{30}$	$\frac{1}{44}$	32 days	M $\frac{1}{44}$	0	5 years	M $\frac{1}{4}$	Progress	Very slight scleral atrophy about each optic entrance. The progress of the myopia seemed at first brought to a standstill. Up to the commencement of the treatment, in January, 1870, it had steadily increased, having been only 1-6½ in October, 1866.
	L		$\frac{20}{40}$	$\frac{1}{4}$	32 days	M $\frac{1}{4}$	0	5 years	M $\frac{1}{4}$	0	

No.	NAME.	Age.	Acuteness of Vision.	Original Myopia.	Treated by Atropine.	Immediate Result.	Primary Improvement.	Interval between Treatment and Second Examination.	Refraction then Found.	Final Improvement.	REMARKS.
6	Mr H.	16	$\frac{20}{20}$	$\frac{1}{11}$	35 days	M $\frac{1}{14}$	$\frac{1}{51.3}$	3 years	M $\frac{1}{12}$	$\frac{1}{132}$	In June, 1867, M was 1-16. Treatment commenced in March, 1869. Small posterior staphyloma.
7	Mr. S. R	20	$\frac{20}{20}$	$\frac{1}{30}$	10 days	M $\frac{1}{42}$	$\frac{1}{105}$	2 years	M $\frac{1}{20}$	Progress	The patient left town after ten days' treatment. The myopia, in this case, supervened on an attack of typhoid fever. The patient was a sportsman, and had previously been an excellent shot. During his sickness he hardly used his eyes at all. The first day he went out he noticed his inability to see the hands on a distant clock which he had always been in the habit of consulting.
	L		$\frac{20}{20}$	$\frac{1}{30}$	10 days	M $\frac{1}{42}$	$\frac{1}{105}$	2 years	M $\frac{1}{20}$	Progress	
8	Mr. C. R	16	$\frac{20}{30}$	$\frac{1}{16}$	41 days	M $\frac{1}{20}$	$\frac{1}{80}$	8 months	M $\frac{1}{16}$	0	Myopia had been rapidly increasing. Retinal vessels were found to be very large, and apparently congested.
	L		$\frac{20}{30}$	$\frac{1}{16}$	41 days	M $\frac{1}{42}$	$\frac{1}{25}$	8 months	M $\frac{1}{30}$	$\frac{1}{34}$	
9	Mary L. R	12	$\frac{20}{20}$	$\frac{1}{20}$	13 days	Ht $\frac{1}{8}$	$\frac{1}{5.7}$	3 months	Hm $\frac{1}{36}$	$\frac{1}{12.8}$	Had good vision till an attack of scarlet fever, six weeks before. Since then had bad pain in eyes; intolerance of light and myopia.
	L		$\frac{20}{20}$	$\frac{1}{20}$	13 days	Ht $\frac{1}{8}$	$\frac{1}{5.7}$	3 months	Hm $\frac{1}{36}$	$\frac{1}{12.8}$	
10	Mr. F. R	19	$\frac{20}{40}$	$\frac{1}{15}$	30 days	M $\frac{1}{20}$	$\frac{1}{60}$	5 months	M $\frac{1}{18}$	$\frac{1}{90}$	Marked insufficiency of the recti-interni, for which an operation was proposed. The vision improved under treatment to 20-30 right, and 20-20 left. Myopia subsequently progressed. (See No. 28.)
	L		$\frac{20}{30}$	$\frac{1}{20}$	30 days	M $\frac{1}{24}$	$\frac{1}{120}$	5 months	M $\frac{1}{18}$	Progress	

No.	NAME.	Age.	Acuteness of Vision.	Original Myopia.	Treated by Atropine.	Immediate Result.	Primary Improvement.	Interval between Treatment and Second Examination.	Refraction then Found.	Final Improvement.	REMARKS.
11	Miss F. R	23	20/40	1/4½	6 weeks	M 1/6	1/14.3	4 months	M 1/5	1/45	Small staphyloma post. in each eye. Complained that eyes "felt weaker" than before the treatment, there being slightly increased sensitiveness to light and inability to use them as long. The myopia of the right eye had increased 1-25 in three years.
	L		20/30	1/4½	6 weeks	M 1/6½	1/18	4 months	M 1/5	1/45	
12	Mr. C. R	18	20/20	1/9	6 weeks	M 1/11	1/48	3 months	M 1/10	1/90	During the eight months preceding treatment the myopia had increased from 1-10 to 1-9. General congestion of retinal vessels and hyperæmia of papilla.
	L		20/30	1/9	6 weeks	M 1/11	1/48	3 months	M 1/10	1/90	
13	Ellen A. R	11	20/40	1/5	46 days	M 1/5	0	4 months	M 1/4½	Progress	About two years before treatment the myopia had amounted to 1-5½ in either eye. Small staphyloma post. in each eye, larger in right.
	L		20/30	1/4½	46 days	M 1/5	1/46	4 months	M 1/5	1/46	
14	Edith G. R	14	20/20	1/20	42 days	M 1/36	1/45	6 months	M 1/16	Progress	Two years before there was in each eye M 1-72. Each parent emmetropic. Engrossing studies were resumed immediately after cessation of the treatment.
	L		20/20	1/36	42 days	M 1/72	1/72	6 months	M 1/20	Progress	
15	Miss R. R	23	20/30	1/18	5 weeks	M 1/30	1/45	3½ months	M 1/30	1/45	Slight muscular insufficiency 2° for near.
	L		20/30	1/18	5 weeks	M 1/30	1/45	3½ months	M 1/30	1/45	

No.	NAME.	Age.	Acuteness of Vision.	Original Myopia.	Treated by Atropine.	Immediate Result.	Primary Improvement.	Interval between Treatment and Second Examination.	Refraction then Found.	Final Improvement.	REMARKS.
16	May H.	11	$\frac{20}{30}$	$\frac{1}{13}$	31 days	M $\frac{1}{16}$	$\frac{1}{70}$	4 months	M $\frac{1}{16}$	$\frac{1}{70}$	Both eyes examined together.
17	Wm. H. J. R	22	$\frac{20}{30}$	$\frac{1}{30}$	13 days	M $\frac{1}{42}$	$\frac{1}{105}$				Did not return.
	L		$\frac{20}{30}$	$\frac{1}{30}$	13 days	M $\frac{1}{42}$	$\frac{1}{105}$				
18	Chas. F. R. R	19	$\frac{20}{20}$	$\frac{1}{20}$	6 weeks	M $\frac{1}{36}$	$\frac{1}{45}$	8 months	M $\frac{1}{36}$	$\frac{1}{45}$	Patient had previously been under observation six months, during which time myopia had steadily increased.
	L		$\frac{20}{20}$	$\frac{1}{24}$	6 weeks	M $\frac{1}{60}$	$\frac{1}{40}$	8 months	M $\frac{1}{60}$	$\frac{1}{40}$	
19	Ella H. R	17	$\frac{20}{30}$	$\frac{1}{6}$	40 days	M $\frac{1}{6}$	$\frac{1}{30}$				Small posterior staphyloma in each eye.
	L		$\frac{20}{30}$	$\frac{1}{6}$	40 days	M $\frac{1}{6}$	$\frac{1}{30}$				
20	Anna L. K. L	13	$\frac{20}{20}$	$\frac{1}{48}$	26 days	M $\frac{1}{60}$	$\frac{1}{240}$				Did not return.

No.	NAME.	Age.	Acuteness of Vision.	Original Myopia.	Treated by Atropine.	Immediate Result.	Primary Improvement.	Interval between Treatment and Second Examination.	Refraction then Found.	Final Improvement.	REMARKS.
21	Mary W. R	16	$\frac{20}{30}$	$\frac{1}{6\frac{1}{2}}$	6 weeks	M $\frac{1}{8}$	$\frac{1}{34}$	10 months	M $\frac{1}{6\frac{1}{2}}$	0	Previous to treatment myopia had been progressive. Small posterior staphyloma in each eye.
	L		$\frac{20}{30}$	$\frac{1}{7}$	6 weeks	M $\frac{1}{9}$	$\frac{1}{31}$	10 months	M $\frac{1}{7}$	0	
22	Annie B. R	13	$\frac{20}{30}$	$\frac{1}{24}$	6 weeks	M $\frac{1}{30}$	$\frac{1}{140}$				Did not return.
	L		$\frac{20}{30}$	$\frac{1}{30}$	6 weeks	E	$\frac{1}{30}$				
23	Mr. H. R	16	$\frac{20}{30}$	$\frac{1}{8}$	5 weeks	M $\frac{1}{13}$	$\frac{1}{20.8}$	17 months	M $\frac{1}{11}$	$\frac{1}{29}$	Very small staph. post. o. d.
	L		$\frac{20}{30}$	$\frac{1}{15}$	5 weeks	M $\frac{1}{20}$	$\frac{1}{60}$	17 months	M $\frac{1}{16}$	$\frac{1}{240}$	
24	Miss W. R	17	$\frac{20}{40}$	$\frac{1}{6\frac{1}{2}}$	6 weeks	M $\frac{1}{6\frac{1}{2}}$	$\frac{1}{36}$	6 weeks	M $\frac{1}{6\frac{1}{2}}$	0	No staphyloma post.
	L		$\frac{20}{40}$	$\frac{1}{6}$	6 weeks	M $\frac{1}{7}$	$\frac{1}{42}$	6 weeks	M $\frac{1}{7}$	0	
25	Miss P. L	24	$\frac{20}{40}$	$\frac{1}{9}$	36 days	M $\frac{1}{12}$	$\frac{1}{36}$	4 months	M $\frac{1}{10}$	$\frac{1}{90}$	This myopia was 1-14 in 1866. It occurred in the left eye of case 2, and was treated 3 years later, during which time the myopia of the right eye remained $\frac{1}{3}$ as before.

No.	NAME.	Age.	Acuteness of Vision.	Original Myopia.	Treated by Atropine.	Immediate Result.	Primary Improvement.	Interval between Treatment and Second Examination.	Refraction then Found.	Final Improvement.	REMARKS.
26	Florence C. R	12	$\frac{20}{30}$	$\frac{1}{16}$	42 days	M $\frac{1}{20}$	$\frac{1}{80}$	14 days	M $\frac{1}{18}$	$\frac{1}{144}$	The myopia had previously been increasing with great rapidity.
	L		$\frac{20}{40}$	$\frac{1}{16}$	42 days	M $\frac{1}{24}$	$\frac{1}{48}$	14 days	M $\frac{1}{20}$	$\frac{1}{80}$	
27	Cora R. R	11	$\frac{20}{20}$	$\frac{1}{36}$	6 weeks	M $\frac{1}{120}$	$\frac{1}{51}$	2½ mo's	M $\frac{1}{72}$	$\frac{1}{72}$	This patient had been considered near-sighted for several years.
	L		$\frac{20}{20}$	$\frac{1}{36}$	6 weeks	M $\frac{1}{120}$	$\frac{1}{51}$	2½ mo's	M $\frac{1}{72}$	$\frac{1}{72}$	
28	Mr. F. R	22	$\frac{20}{30}$	$\frac{1}{11}$	50 days	M $\frac{1}{14}$	$\frac{1}{51}$				This was case 10, returning three years later; declining the operation for insufficiency, and requesting a renewal of the atropine treatment.
	L		$\frac{20}{20}$	$\frac{1}{18}$	50 days	M $\frac{1}{16}$	$\frac{1}{69}$				
29	Mr. F. R	13	$\frac{20}{20}$	$\frac{1}{10}$	38 days	M $\frac{1}{10}$	0				2½ years before, the myopia of each eye had been 1-18. No muscular insufficiency. During first four weeks of atropinization, myopia went down to 1-12 in each eye; came back, however, the last week.
	L		$\frac{20}{30}$	$\frac{1}{9}$	38 days	M $\frac{1}{9}$	0				
30	Master M. R	13	$\frac{20}{30}$	$\frac{1}{20}$	60 days	Ht $\frac{1}{36}$	$\frac{1}{120.8}$	3 months	M $\frac{1}{48}$	$\frac{1}{34}$	This patient was first seen a month before he came under treatment. He had then, right M 1-42, left E. The spasm of accomodation was attended by much pain.
	L		$\frac{20}{20}$	$\frac{1}{36}$	60 days	Ht $\frac{1}{36}$	$\frac{1}{18}$	3 months	M $\frac{1}{48}$	$\frac{1}{144}$	

No.	NAME.	Age.	Acuteness of Vision.	Original Myopia.	Treated by Atropine.	Immediate Result.	Primary Improvement.	Interval between Treatment and Second Examination.	Refraction then Found.	Final Improvement.	REMARKS.
31	Miss H. R	21	$\frac{20}{30}$	$\frac{1}{9}$	39 days	M $\frac{1}{11}$	$\frac{1}{50}$				
	L		$\frac{20}{30}$	$\frac{1}{10}$	39 days	M $\frac{1}{12}$	$\frac{1}{60}$				
32	Miss F. R	18	$\frac{20}{20}$	$\frac{1}{24}$	23 days	Ht $\frac{1}{11}$	$\frac{1}{7.5}$	2 weeks	Hm $\frac{1}{20}$	$\frac{1}{10.9}$	Near sight had only been complained of a year when first seen. A month before being treated it was only 1-36. The spasm relaxed slowly. At the end of three days, Hm. 1-30; two days later, Hm. 1-18; four days later, Hm. 1-14. Ht. 1-11 was not reached for twenty days.
	L		$\frac{20}{20}$	$\frac{1}{24}$	23 days	Ht $\frac{1}{11}$	$\frac{1}{7.5}$	2 weeks	Hm $\frac{1}{20}$	$\frac{1}{10.9}$	
33	Miss P. R	18	$\frac{20}{30}$	$\frac{1}{9}$	5 weeks	M $\frac{1}{14}$	$\frac{1}{25}$	14 days	$\frac{1}{11}$	$\frac{1}{50}$	Commencing staphyloma o. d.
	L		$\frac{20}{20}$	$\frac{1}{11}$	5 weeks	M $\frac{1}{20}$	$\frac{1}{24}$	14 days	$\frac{1}{13}$	$\frac{1}{71}$	
34	Kitty J. R	15	$\frac{20}{20}$	$\frac{1}{48}$	6 weeks	H $\frac{1}{18}$	$\frac{1}{13}$				Came complaining of weakness of eyes and inability to use them. Vision (for distant objects) has much fallen off of late. No congestion.
	L		$\frac{20}{20}$	$\frac{1}{42}$	6 weeks	H $\frac{1}{20}$	$\frac{1}{13.5}$				
35	Nelly S. R	22	$\frac{20}{30}$	$\frac{1}{8}$	6 weeks	M $\frac{1}{8}$	0				Recently much pain on use. Considerable congestion of optic discs.
	L		$\frac{20}{80}$	$\frac{1}{8}$	6 weeks	M $\frac{1}{8}$	0				

No.	NAME.	Age.	Acuteness of Vision.	Original Myopia.	Treated by Atropine.	Immediate Result.	Primary Improvement.	Interval between Treatment and Second Examination.	Refraction then Found.	Final Improvement.	REMARKS.
36	Miss M. W. R	18	$\frac{20}{20}$	$\frac{1}{48}$	5 weeks	E	$\frac{1}{48}$				Two years before had seen distant objects with entire distinctness.
	L		$\frac{20}{20}$	$\frac{1}{48}$	5 weeks	E	$\frac{1}{48}$				